

LOGIC GATES INCLUDING DIODE-CONNECTED METAL-OXIDE-
SEMICONDUCTOR FIELD-EFFECT TRANSISTORS (MOSFETS) TO CONTROL
INPUT THRESHOLD VOLTAGE LEVELS AND SWITCHING TRANSIENTS OF
OUTPUT LOGIC SIGNALS

ABSTRACT OF THE DISCLOSURE

Logic gates are provided that include a diode-connected metal-oxide-semiconductor field-effect transistor (MOSFET) to produce a gate threshold voltage that differs from a mid-supply voltage level, while providing symmetry in the switching transients of the output logic signals. In one embodiment, the logic gate is a NAND gate. Use of a diode-connected n-type MOSFET in a ground path produces a threshold voltage level higher than the mid-supply voltage level. Use of a diode-connected p-type MOSFET in a supply voltage path produces a threshold voltage level lower than the mid-supply voltage level. In another embodiment, the logic gate is a NOR gate. Use of a diode-connected n-type MOSFET in a ground path produces a threshold voltage level higher than the mid-supply voltage level. Use of a diode-connected p-type MOSFET in a supply voltage path produces a threshold voltage level lower than the mid-supply voltage level.